

REMARKS

The March 27, 2008 final Office Action rejects pending claims 1-20, 23-25, 27-38, and 40-47 pursuant to 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,290,713 of Russell or U.S. Patent No. 5,913,883 of Alexander in view of U.S. Patent No. 6,508,813 of Altshuler, U.S. Published Patent Application No. 2003/0018373 of Eckhardt, and/or U.S. Patent No. 6,015,404 of Altshuler.

Claim Amendments

Applicant amends independent claim 1 to recite an apparatus which includes “controls for selecting and sequentially operating said sources in a selected sequence to form a *time-varying* irradiation pattern” Applicant also amends independent claims 24, 35, and 43 in a similar manner. Support for these amendments is found throughout the specification as filed, in particular, at paragraph [0017] and paragraph [0039] of the corresponding U.S. published patent application, U.S. 2004/0162549. No new matter is added.

Applicants also cancel dependent claim 3, and amend claim 4 to depend from independent claim 1.

Objection to Drawings

The Examiner objects to the drawings pursuant to 37 CFR 1.83(a) as purportedly not showing every feature of the invention specified in the claims. More specifically, the Examiner states:

. . . the “interlock which operates in conjunction with said controls to disable operation of said sources unless said component is properly positioned to protect said selected portion”; the “diagnostic tool mounted on said mount”; and the “wireless connection” must be shown or the feature(s) canceled from the claim(s).

Office Action, p. 2.

These same objections were originally presented in a June 18, 2007 Office Action, and the Applicant responded in a December 17, 2007 Response and Amendment.

More specifically, regarding the “interlock . . .” limitation, the Applicant submitted an amended Figure 8 to “show the interlocks 813 as described in the specification at paragraph [0057].” December 17, 2007 Amendment and Response, p. 12. Next, the Applicant showed that the term “diagnostic tool” is represented as reference number “563” of Figure 5 of the application as filed, and also described at paragraphs [0063] and [0064] of the corresponding published patent application. Finally, the Applicant explained that the “wireless communications link” is shown in Figure 13 as elements 1318 and 1320 and described in paragraph [0066]. See December 17, 2007 Amendment and Response, p. 12.

Applicant believes that the previously filed amendments and remarks obviate the pending objections and Applicant’s previous response was perhaps overlooked. However, should the Examiner disagree, Applicant respectfully requests further explanation of any pending issues.

Rejections Pursuant 35 U.S.C. § 103(a)

The Examiner rejects pending claims 1-20, 23-25, 27-38, and 40-47 pursuant to 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,913,883 of Alexander or U.S. Patent No. 6,290,713 of Russell in view of various combinations of U.S. Patent No. 6,508,813 of Altshuler, U.S. Published Patent Application No. 2003/0018373 of Eckhardt, and/or U.S. Patent No. 6,015,404 of Altshuler. The individual rejections are discussed below.

Claims 1-7, 9-15, 17-22, 24-28, 30, 31, 35-44, 46 and 47

The Examiner rejects the above-identified claims as being unpatentable over U.S. Patent No. 5,913,883 of Alexander (“Alexander”) or U.S. Patent No. 6,290,713 of Russell (“Russell”) in combination with U.S. Patent No. 6,508,813 of Altshuler (“Altshuler”).

Claim 1, as amended, recites an optical dermatology apparatus, which comprises a plurality of optical radiation sources; a mount in which said sources are positioned at selected locations, where the mount is adapted for positioning adjacent a treatment region

of a subject's body. The apparatus also includes controls for sequentially operating the sources in a selected sequence to form a *time-varying* irradiation pattern.

None of the cited references, alone or in any combination, teach or suggest controls for selectively operating a plurality of optical radiation sources in “a selected sequence to form a time-varying irradiation pattern.” The generation of the claimed time-varying illumination pattern can provide a number of advantages, such as facilitating heat dissipation.

In contrast, the Alexander reference discloses a therapeutic device having a plurality of light emitting diodes carried by a carrier “for substantially uniformly flooding the entire surface of the organic tissue surrounded by the carrier with beneficial light...” *See* Abstract. In other words, Alexander does not teach or suggest operating its light sources to generate an irradiation pattern, much less an irradiation pattern generated based on an input from a diagnostic sensor. Rather, Alexander reiterates that its light emitting diodes “...are operative for totally, substantially, and *uniformly* flooding the entire face of the individual with beneficial light.” [Emphasis Added] col. 2, lines 20-22.

Russell also does not teach or suggest “sequentially operating individual sources in a selected sequence to form a *time-varying* irradiation pattern.” Rather, Russell discloses a flexible illuminator for the delivery of light energy to the skin, e.g., by wrapping the illuminator around an infant or a limb of an adult. The illuminator can be formed of a flexible substrate on which a plurality of light sources, e.g., LEDs, are provided. The illuminator can include an interface for diffusing the light generated by the individual sources “to provide a more *uniform, constant* and intense light pattern on the contact surface ...” [Emphasis Added] *See* col. 10, lines 9-21. Such uniform light pattern is, however, distinct from the *time-varying* irradiation pattern recited in claim 1.

Russell does recite that in some cases “[T]he illuminator may comprise a controller capable of making the light-generating sources separately addressable so that they may be selectively illuminated in a particular pattern to achieve a particular therapeutic pattern.” There is, however, no indication in Russell that such a therapeutic

pattern can be a *time-varying* – rather than a static pattern generated by activation of a subset of the sources.

The third reference, Altshuler, also does not teach sequentially operating a plurality of light sources to generate a time-varying irradiation pattern. Rather, Altshuler provides an applicator or head (16) (see Figures 1 and 2) which includes a waveguide (40) configured to receive and uniformly deliver electromagnetic radiation from an energy source to a treatment area (i.e., skin). There is no teaching, disclosure, or suggestion of an apparatus having controls for selecting and sequentially operating said sources in a selected sequence to form a *time-varying* irradiation pattern.

Hence, claim 1, and claims 2-7, 9-15, 17-20, which depend directly or indirectly on claim 1 are patentable over the cited art.

Independent claims 24, 35, and 43 are also amended to include this *time-varying irradiation pattern* limitation. That is, independent claim 24 recites a method of performing optical dermatology which includes “selecting and operating at least some of a plurality of optical radiation sources mounted adjacent the treatment region of the subject in a selected sequence to form a *time-varying irradiation pattern*.” Claim 35 recites an apparatus which includes “a control circuitry electrically coupled to said radiation sources and said switching array for selecting and actuating the sources in a selected sequence to form a *time-varying irradiation pattern* of said radiation sources for performing a treatment protocol,” and independent claim 43 recites a system having “a control circuitry electrically coupled to said radiation sources for selective actuation thereof to form a *selected time-varying irradiation pattern*.” Therefore, the reasoning provided above in relation to claim 1 applies equally to independent claims 24, 35 and 43 to establish that these claims, and those claims depending therefrom, are also patentable over the cited art.

Claims 8, 23, 29 and 34

The Examiner also rejects claims 8, 23, 29, and 34 as being unpatentable over Russell or Alexander in combination with Altshuler and further in combination with U.S. Published Patent Application No. 2003/0018373 of Eckhardt.

Claims 8 and 23 depend on independent claim 1. Claims 29 and 34 depend on independent claim 24. Hence, these dependent claims incorporate the features of claims 1 and 24. As discussed above, the combined teachings of Russell or Alexander and Altshuler do not teach at least one salient feature of claim 1, namely, sequentially operating the sources in a selected sequence to form a *time-varying* irradiation pattern. Eckhardt does not cure this deficiency. Rather, Eckhardt provides a method and device for sterilizing and/or disinfecting a treatment site (e.g., area of skin, a catheter, etc.) via ultraviolet light. The Eckhardt device includes an ultraviolet energy source (7) disposed within a reflector (9) thereby allowing the ultraviolet energy to be focused on the treatment site (e.g., wound (1)).

Regarding the ultraviolet energy source (7), Eckhardt teaches that “[L]ight may be generated by light source 7 in one or more flashes,” or “[L]ight may also be generated by light source as continuous radiation over a period of time.” See paragraphs [0033]-[0034]. Pulsing or flashing energy onto the treatment area, is however, distinct from *selecting and sequentially operating [the plurality of optical radiation sources] in a selected sequence to form a time-varying irradiation pattern*. That is, when activated, the Eckhardt device uniformly radiates the treatment area. There is no teaching or suggestion that the device includes controls for selecting and sequentially operating said sources in a selected sequence to form a time-varying irradiation pattern.

Thus, claims 8, 23, 29, and 34 are allowable at least because they depend from an allowable base claim.

Claims 32, 33, and 43-45

The Examiner also rejects claims 32, 33, and 43-45 as being unpatentable over either Alexander or Russell in combination with the '813 patent of Altshuler, and further in combination with U.S. Patent No. 6,015,404 of Altshuler (the "'404 patent").

Claim 32 depends on independent claim 24 and further recites that the method comprises detecting a condition in the treatment region. Claim 33 depends on claim 32 and further recites that the method comprises operating the sources in response to the detecting of the condition.

As discussed above, the combined teachings of Russell or Alexander and the '813 patent of Altshuler do not provide at least one salient feature of the method of independent claim 24, and consequently that of claims 32 and 34 that depend on claim 24, namely, a step of *selecting and operating at least some of a plurality of optical radiation sources mounted adjacent the treatment region of the subject in a selected sequence to form a time-varying irradiation pattern*. The '404 patent does not cure this deficiency. Rather, this additional reference provides a laser skin-treatment system having feedback control capable of preventing damage to healthy tissue. That is, the feedback control is capable of sensing some parameter (e.g., temperature), which is indicative of the onset of tissue damage, and further triggering a relief mechanism such as terminating the treatment or cooling the area (e.g., supplying a cooling fluid to an epidermis during treatment of the underlying dermis). The '404 patent does not disclose or suggest a method which includes selecting and operating at least some of a plurality of optical radiation sources mounted adjacent the treatment region of the subject in a selected sequence to form a time-varying irradiation. For at least these reasons, the '404 Altshuler patent does not cure the deficiencies of any of the above-identified references.

Thus, claims 32 and 33 are allowable at least because they depend from an allowable base claims.

Independent claim 43 recites a system having *control circuitry electrically coupled to said radiation sources for selective actuation thereof to form a selected time-*

varying irradiation pattern. Claim 44 depends from claim 43 and recites that the control signals cause actuation of at least selected ones of said radiation sources in a selected sequence. Claim 45 also depends from claim 43 and recites that a computer communicates with said applicator via a wireless link. As established above, no combination of Alexander, Russell, Altshuler, Eckhardt, and/or the '404 patent of Altshuler teaches, suggests, or discloses the system of independent claim 43. Thus, claims 44 and 45 are also allowable at least because they depend from an allowable base claim.

Conclusion

Applicant submits that all pending claims are now in condition for allowance, and allowance thereof is respectfully requested. The Examiner is encouraged to telephone the undersigned attorney for Applicant if such communication is deemed to expedite prosecution of this application.

Respectfully submitted,

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Electronic Signature: /Thomas J. Engellenner/
Thomas J. Engellenner
Reg. No.: 28,711
Nutter McClennen & Fish LLP
World Trade Center West
155 Seaport Boulevard
Boston, MA 02210
Tel: (617)439-2948
Fax: (617)310-9948